Arlington Analytics

Housing Prices and the Missing Middle

Summary

To evaluate the impact of loosening zoning restrictions to allow developers to build new types of housing such as duplexes, triplexes, and smaller apartments across the county, Arlington is conducting its Missing Middle Study. According to the draft framework for Phase 2 of the, Missing Middle development is expected to generate "wider range of housing types at lower prices than what is currently available."

The report projects that apartments may be available from $520K to $900K (or $2,700 to $3,900 per month in rent), duplexes starting at $1.1 million, and townhomes from about $1 million. Building these new units will also have an impact on prices of existing homes. We add to Arlington's Missing Middle study by using recent economic research to evaluate the likely impact on prices on all residences across different market segments and for the county as a whole. We find that:

- New Missing Middle apartments will have a very small effect on prices of existing apartments. We expect that the price of a $4,000/mo. apartment in 2032 will decline by about $30 if 40 new Missing Middle apartments get built per year;

- For each 10 lots developed in each year with Missing Middle Housing, the price of existing detached single-family homes will increase by about 0.5 percent in 2032. For example, developing 200 lots (20 lots per year) would lead to an increase in prices of about 1.0 percent for detached single-family homes;

- New Missing Middle townhomes or duplexes will have a larger impact on existing prices for those types of residences. The decline in townhome and duplex prices will continue until alternatives such as other Missing Middle units or detached single-family homes are more profitable, at which point townhouse and duplex construction will slow or stop; and

- County-wide residential housing prices decline, but the fall is very close to zero regardless of the type of new construction; and

In the next section, we describe the economics of new Missing Middle construction. In subsequent sections we quantify those effects on county-wide housing prices for townhomes and duplexes; apartments and condominiums; and detached single-family homes.

Housing Supply and Demand

Figure 1 illustrates the basic economics of the housing market that drives our analysis. Figure 1(a) shows the economics of housing in a market with available space for building; Figure 1(b) shows a municipality such as Arlington with almost no space and strong building restrictions; and Figure 1(c) shows what a municipality like Arlington could expect if zoning restrictions were relaxed.

(a)   Resident Growth in a Typical Area   (b) Resident Growth in a Supply-Constrained Area   (c) Relaxing the Supply Constraints
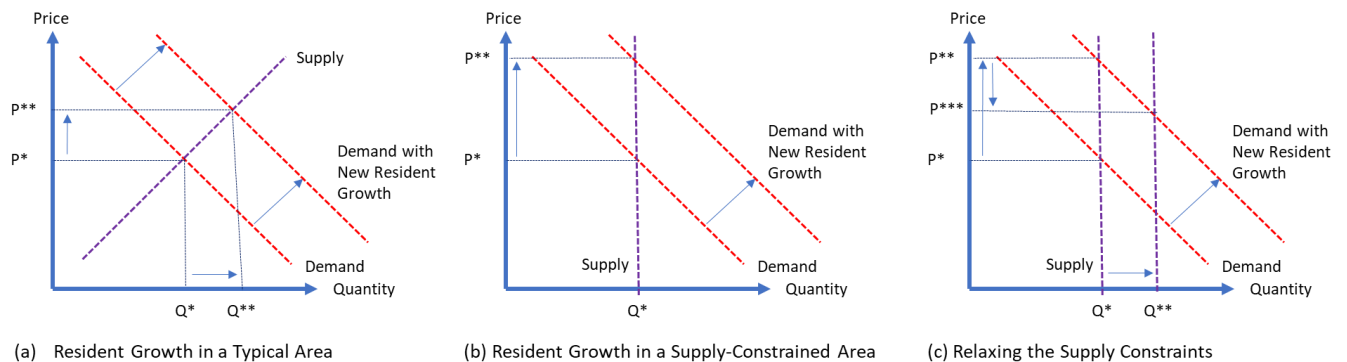
Figure 1: Supply and Demand for Housing and Population Growth.

In Figure 1(a), we show how the housing market adjusts to an influx of new residents for a market with few restrictions on supply. The demand curve runs from the upper left to the lower right. As the price of housing increases, residents demand less of it. The supply curve here runs from the bottom left to the upper right. As housing becomes more expensive, builders want to build more units. The intersection of the price and quantity gives us the price (P*) and quantity (Q*) that we observe in the area. A new influx of residents pushes out the demand curve to the right. This moves the intersection between supply and demand up and to the right, leading to a higher price (P**) and quantity (Q**).

Figure 1(b) more closely represents Arlington today. Gyourko (2015) highlights the effect that regulations like Arlington's zoning restrictions have on housing construction "resulting in larger house price increases and slower growth in the quantity of housing as demand increases." In addition to the building restrictions, nearly all available space in Arlington is developed. These two features result in a supply curve that is probably close to vertical: Builders cannot respond to higher prices with increased construction (Glaeser et al. (2008) and Glaeser and Gyourko (2018)). In this case, the same increase in population growth leads to a larger increase in price from P* to P**, but no meaningful change in quantity, Q*.

Figure 1(c) illustrates the anticipated effect of allowing Missing Middle development. Allowing additional density would push the supply curve to the right. As supply expands, quantity increase from Q* to Q** and the price drops from P** to P***, negating some of the price increase that comes from a population increase. In the subsequent sections, we quantify the change from P** to P***, which is the change in residential prices in several different segments of Arlington's housing market that would occur if Missing Middle development were permitted.

House Prices and Supply

New Missing Middle residences will be among the most expensive townhomes, duplexes, and garden-style apartments in their neighborhoods. Nonetheless, as shown by Bratu et al. (2021), this new construction has the potential to lower prices for existing units.[1]

Unlike the properties highlighted in the recent research on apartments, new Missing Middle construction displaces existing detached single-family homes. As existing single-family homes get replaced with Missing Middle, their supply becomes more restricted, and their prices will increase. In the next section, we estimate these effects on prices across several different market segments and for different construction scenarios.

Housing Prices and Missing Middle in Arlington

We want to evaluate the price change from pushing out the supply curve in Figure 1(c). To do that, we need to know the steepness of the demand curve, which comes from Albouy et al. (2016). The steepness of the demand curve is also known as the *uncompensated demand elasticity*—or the percent change in quantity of housing demanded for a percent change in price—and will allow us to approximate the overall price change due to new construction.[2]

We make two additional key assumptions in our analysis. First, we assume that there are three distinct housing markets in Arlington: People who are looking for detached single-family homes; townhomes and duplexes (grouped together); or apartments. In order words, we assume that someone in the market for a duplex or townhome is not looking to purchase an apartment or a detached single-family home.[3] Second, we assume that each lot can accommodate two duplex units, three townhouse units, or four apartment units.[4]

In Table 1, we show the anticipated change in prices by type of property in a couple of different scenarios. We show examples of changes to county-wide housing prices we would expect for each 10 lots per year that are converted to Missing Middle.

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[1] Recent research from Asquith et al. (2021) has shown that the effect is stronger in the immediate area, at least among lower-income housing. To put that finding in the context of Arlington County, a new building on Columbia Pike might affect rents for similar units within a few blocks along the Columbia Pike corridor, but is unlikely to significantly affect rents or housing prices in other neighborhoods such as Ballston or Aurora Highlands. Nonetheless, our tools limit our analysis to the effect on prices across the entire county.

[2] Albouy et al. (2016) estimate the *uncompensated demand elasticity* at -0.67, meaning that for each one percent increase in price, the quantity of housing demanded declines by about 2/3 of a percent.

[3] There may be some substitutability across housing types, especially for existing residences.

[4] The county staff presentation on phase two of the missing middle study states that the county will likely "set a maximum building size for new housing types and limit townhouses to groups of 3 to manage unit sizes and sales prices." Staff also present 8-unit options; however, those are limited to lots large enough to accommodate them. Therefore, we do not evaluate options larger than four units.

Table 1: County-wide Percent Change in Housing Prices

	40 Apartments / Year (10 lots)	30 Townhomes / Year (10 lots)	20 Duplexes / Year (10 lots)	250 More Hi-Rise Units / Year
Apartments (2023)	-0.1%	0.0%	0.0%	-0.5%
Apartments (2032)	-0.7%	0.0%	0.0%	-4.3%
Townhouses and Duplexes (2023)	0.0%	-0.6%	-0.4%	0.0%
Townhouses and Duplexes (2032)	0.0%	-6.4%	-4.3%	0.0%
Detached Single-Family Homes (2023)	0.1%	0.1%	0.1%	0.0%
Detached Single-Family Homes (2032)	0.5%	0.5%	0.5%	0.0%
Total (2023)	0.0%	0.0%	0.0%	-0.1%
Total (2032)	0.0%	-0.1%	0.0%	-0.8%

For every 40 new apartments per year—10 quadraplexes on 10 lots—we expect that county-wide prices for apartments (to rent and own) will decline about 0.7 percent by 2032. The decline is relatively small because there are 76,000 apartments and condos in Arlington County today and we anticipate more than 85,000 apartments and condos by 2032.[5]

To put this in a more concrete terms, we show the effect on the rent of a $4,000 per month apartment in Table 2. We would expect that the monthly rental price for this property would fall to about $3,972 per month, or a decrease of about $28.

Table 2: County-wide Housing Prices in 2032

	Price with No Change to Zoning	40 Apartments / Year (10 lots)	30 Townhomes / Year (10 lots)	20 Duplexes / Year (10 lots)	Additional 250 Hi-Rise Units / Year
Apartment Price	$4,000/mo.	$3,972	$4,000	$4,000	$3,827
Townhouse Price	$1,100,000	$1,100,000	$1,029,000	$1,053,000	$1,100,000
Detached SFH Price	$2,000,000	$2,010,000	$2,010,000	$2,010,000	$2,000,000

Every new apartment Missing Middle apartment building, however, reduces the availability of detached single-family homes, which leads to a 0.5 percent increase by 2032. In general, redeveloping 10 lots of detached single-family homes per year would lead to a $10,000 increase in the price of a $2,000,000 house in 2032, shown in Table 2.

Overall, these two effects cancel each other out, and there's effectively no significant decline in countywide prices if new apartments are built. A supply increase of 40 units per year is a very small increase in supply for a county with nearly a quarter-million residents and 85,000 anticipated apartments.

The county anticipates construction of some combination Missing Middle housing types, and in its report on Phase 2 of the Missing Middle study, "only approximately 20 lots per year would become "missing middle", which will be split among townhomes, apartments, and duplexes." In most cases, we estimate that the effects of multiple types of construction could be estimated by adding together columns across Table 1. For example, with the yearly construction of 40 apartments and 20 duplexes spread across 20 total lots, prices in 2032 would likely increase by 1.0 percent for detached single-family houses, and the prices would fall by 0.7 and 4.3 percent for apartments and townhouses/duplexes respectively.[6]

For 30 townhomes, the effect on townhome and duplex prices is significantly larger. Overall, we calculate that the county has fewer than 7,000 townhomes and duplexes; 300 new units over 10 years represents a much larger increase proportionally, and this increase may lead to a price decrease of as much as 6.4 percent in 10

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[5] Over the past 10 years, Arlington has seen growth of about 1,170 apartments and condos per year. For our analysis, we expect that on average the same number of new apartments and condos over the next decade.

[6] There is a limit to the downward price effect on townhouses and duplexes; a large enough decline in their values would make their construction less profitable compared to detached single-family homes or apartments. Therefore, we would not expect to be able to extrapolate these results for a larger number of townhouse and duplex developments.

years. Developers, however, may not build many more townhomes because as their prices decrease, alternate developments such as larger apartments or especially detached, single-family homes become more profitable relative to townhomes and duplexes. As before, we expect a small 0.5 percent increase in price for detached homes, which leads to a 0.1 percent decrease in home prices countywide.

As a point of comparison, an increase of about 250 more apartments each year—which we assume do not displace detached single-family housing—has a much more substantial impact on affordability compared to Missing Middle construction. In this scenario, 2,500 more apartments lead to a 4.3 percent drop—or $173 per month fall in a $4,000 per month apartment—in apartment prices and a 0.8 percent drop in overall price levels. As larger new apartments are not displacing any other development, townhomes and detached single-family home prices do not change.

Conclusion

Overall, the effect of new Missing Middle residences on housing prices will be small, largely because the anticipated construction is small relative to the number of existing residences in the county. New Missing Middle apartment construction will have almost no effect on overall affordability for existing properties—the number of existing residences in that market segment is simply too large for Missing Middle to have a meaningful impact on rents and prices. Construction on townhomes and duplexes will have a larger effect on that market segment. Nonetheless, this market segment is a small component of the Arlington real estate market; therefore, overall housing prices will not be significantly impacted.

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Notes and Acknowledgments

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